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SILVICAL LEAFLET 52.

OREGON OAK.

Quercus garryana Dougl.

The largest oak in the Pacific Northwest and the most important commercially is Oregon oak, so named because it reaches its best development and greatest abundance in Oregon. It is also called "post oak," because it furnishes a durable fence post. It belongs to the white oak subfamily, and both the tree and the wood resemble eastern white oak in appearance.

RANGE AND OCCURRENCE.

The northern limit of the distribution of Oregon oak is in the northwestern part of Vancouver Island, British Columbia, the most northerly point in the natural range of any North American oak. Thence it extends south through western Washington, Oregon, and California to the Santa Cruz Mountains, some 60 miles south of San Francisco. It grows west of the Cascade Mountains only, except in the valleys of the Columbia River and its tributaries as far east as The Dalles, Oreg., and Goldendale and Tampico, Wash.

It sometimes grows at an altitude of 3,000 feet in Washington and Oregon, on the foothills of the Cascade and Siskiyou Mountains, and 4,000 feet in California; but it is distinctly a tree of the intermountain valleys and lower hills. It is most abundant in semi-arid prairies, on ledgy, warm hillsides, or in the border zone between forest and open country, and occupies areas not suited to the coniferous timber trees of the locality. The range of situations on which it will grow is wide, from the sand islands in the Willamette River to ledgy ridges on the Cascades.

CLIMATE.

Oregon oak will grow where the annual precipitation is as little as 15 or as much as 60 inches, and where the variation in temperature is from below zero to above 110° F. It therefore can not be said to be fastidious as to climate. It does, however, make its best development in the climate of the southern Oregon valleys; here the annual precipitation is about 30 inches, the summers are almost rainless, the winters are not extremely cold, and the atmospheric humidity is low during the growing season.

ASSOCIATED SPECIES.

Oregon oak, together with valley oak and, less frequently, other oaks, forms the major portion of the open oak woods of the valleys and foothills of southern Oregon and northern California. It often forms pure stands over small areas, sometimes in dense groves, and sometimes as scattered individuals dotted over dry hills and prairies. Aside from the other oaks, its usual associates, with which it always forms rather open stands, are madroña, western yellow pine, Douglas fir, incense cedar, western chinquapin, and California laurel.

HABIT.

The bark of Oregon oak is light gray and is thin and scaly. The leaves are thick, deep green above, pale green and usually hairy beneath, and coarsely pinnatifid-lobed, with deep sinuses, the lobes being without bristle tips; the acorns are sweet and have shallow cups.

Oregon oak usually has a short, clear bole, often crooked, and a large round, bushy crown, suggestive of that of an old apple tree. Its total height is usually 50 or 60 feet and its diameter 20 to 30 inches. Individuals sometimes attain a height of 90 feet and a diameter of 4 feet. An exceptionally large tree, growing in the open in Josephine County, Oreg., has a diameter of 9 feet at breastheight. In exposed situations or high on the mountains, and in the southern part of its range, the tree is apt to be stunted or shrublike.

The root system is not particularly fibrous, but is made up of a number of large, strong roots, with a considerable lateral spread. Young trees have a prominent taproot.

SOIL AND MOISTURE.

This tree is not exacting in its soil and moisture requirements. It grows on sands, gravels, clays, or rocky soils, either deep or shallow, and either very dry or well-watered; it makes good growth, however, only on well-drained, rather light, deep soils, such as are found in

river benches. Its growth on soils too shallow and poor for its usual associates does not mean that it actually prefers these soils, but indicates rather that in competition with other trees Oregon oak has been forced to the less favorable situations, where it is free from competition with more tolerant and more rapid-growing species.

TOLERANCE.

Abundant light, both from the side and the top, is a requisite for the life of this tree. In youth it will endure some shading, but on the whole it is less tolerant than any of its associates. Its great intolerance, combined with its small height, seriously handicaps it in competition with other species.

GROWTH AND LONGEVITY.

Like most of the white oaks, Oregon oak is rather slow growing, and on poor soils the diameter growth is exceedingly slow. It is long lived and is known to live 250 years; probably there are occasional trees very much older. Usually, however, it is unsound after 150 years.

SUSCEPTIBILITY TO INJURY.

Like most oaks, its foliage is attacked by a great number of animal and vegetable parasites, none of which, however, do sufficient damage to kill the tree. Its twigs and branches are often profusely covered with mistletoe (*Phoradendron villosum*), particularly in southern Oregon. This parasite kills and deforms portions of the tree and undoubtedly lessens its vitality. Several species of fungi attack and seriously damage its roots and wood.

This tree is fairly free from mechanical injuries. It is windfirm, and grows in open stands not subject to surface fire and lightning, but because of its thin bark it suffers severely when actually exposed to fire.

REPRODUCTION.

Seed is produced abundantly during seed years, which occur every two or three years. In the intervening years almost no seed is produced. In a good seed year the acorns are so abundant that they form a large source of food for hogs pastured in the valleys of southern Oregon and northern California. Seedlings, however, are not abundant, even where there are no hogs, probably because the sites on which the tree grows are unfavorable to the germination of the acorns, since the radicle can not readily penetrate the sod which is common in the oak woods.

The species sprouts vigorously from the stump, but the usual method of reproduction is by root suckers, which are abundant

around large trees. These root suckers, locally called "oak grubs," form the small dense patches of pure Oregon oak saplings which are so characteristic of this species.

UTILIZATION.

Throughout the valleys of Oregon it is the most abundant broad-leaf tree and one of the few that produce hard, strong wood. Its wood is light brown, very hard, strong in young trees, tough, and durable, and has a pretty grain. It tends to check, however, and to be brash and flinty; only a small proportion of the tree yields clear lumber.

It is used locally on the farm where a heavy and hard wood is needed, and to some degree in the wood-using industries of Washington, Oregon, and California (about 2,000,000 board feet annually in Oregon) in the manufacture of furniture, ax and pick handles, saddles, stirrups, boats, cooperage, inside finish, and for other purposes similar to those to which eastern white oak is put. There is not enough timber of commercial size in any one locality to make it an important source of lumber.

It is very highly prized throughout its range for fuel and for fence posts, and is cut largely for these purposes.

MANAGEMENT.

Oregon oak has not enough commercial value to warrant special consideration where more valuable species can be grown. On slopes where the soil is thin it is valuable as a soil and moisture conserver. Many of the stands of Oregon oak are temporary in character and are gradually being replaced by the more valuable western yellow pine and Douglas fir, which is, on the whole, a desirable change.

Land adapted to a permanent growth of Oregon oak, however, should be managed so that it will continue to produce trees of this species of good quality in the largest possible quantity. Under management, its stands can usually be depended upon to reproduce satisfactorily by root suckers and coppice sprouts. The stands must be given absolute protection from fire, and the old trees should be cut so as to favor vigorous sprouting. The object of management should ordinarily be to raise the maximum amount of cordwood and tool-handle material, leaving only a few of the best trees to produce lumber.